



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/534,501

05/10/2005

Carlo Canteri

40111/GM/lp

5035

7590
Modiano & Associati
Via Meravigli, 16
Milano, 20123
ITALY

02/12/2008

EXAMINER

MAYO, TARA L

ART UNIT

PAPER NUMBER

3671

MAIL DATE

DELIVERY MODE

02/12/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,501	Applicant(s) CANTERI, CARLO	
	Examiner TARA L. MAYO	Art Unit 3671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 36-72 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 36-72 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 36 through 39, 43 through 46, 51, 54, 71 and 72 are rejected under 35 U.S.C. 102(e) as being anticipated by Vandehey et al. (U.S. Patent No. 6,662,516 B2).

Vandehey et al. '516 disclose a method for reinforcing the structural integrity of wall systems consisting of:

with regard to claims 36, 71 and 72,

locating existing cavities (24) in a wall system (22) of building;

providing spaced injection holes (32) with said wall system; and

inserting injection tubes (30) in said injection holes;

wherein said step of injecting includes injecting an expandable substance (26; col. 5, lines 7 through 12);

Art Unit: 3671

with regard to claim 37,

wherein during the step of injection said injection tubes are retracted gradually;

with regard to claim 38,

wherein said injection holes are formed substantially at right angles to the largest surface of the cavities inside the wall system;

with regard to claim 39,

wherein said substance is constituted by a closed-cell foam (col. 4, lines 5 through 9);

with regard to claim 43,

wherein said substance has a maximum expansion pressure that is lower than a bursting limit of the wall system in which it is injected (col. 5, lines 7 through 12);

with regard to claim 44,

wherein the reaction time of said substance is between 3 seconds and 60 seconds (implied at col. 5, lines 27 through 32);

with regard to claim 45,

wherein the chemical reaction for expansion of said substance and said substance during expansion remain non-altered by the presence of water;

with regard to claim 46,

wherein said substance is waterproof (Vandehey et al. '516 - Claim 44);

with regard to claim 51,

wherein said substance (i.e., closed cell polyurethane foam), once and injected and hardened, has a lower relative density than water;

with regard to claim 54,

wherein said injection holes are provided along a direction with a longitudinal extension that is contained between planes of arrangement of two opposite faces of the wall system.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 40 through 42, 66 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vandehey et al. (U.S. Patent No. 6,662,516 B2) in view of WIPO 9824982.

Vandehey et al. '516 fail to teach:

with regard to claim 40,

the foam is an MDI;

with regard to claim 41,

the substance having a maximum expansion pressure between 20 kPa and 200 kPa; and

with regard to claim 42,

the substance experiencing a reduction in the maximum expansion pressure upon a low increase in volume; and

with regard to claims 66 and 67,

constantly monitoring the movement of the wall along directions substantially perpendicular to the planes of arrangement during injection of the substance with a laser level.

WIPO '982 discloses a method for reinforcing the structural integrity of a soil volume comprising the steps of:

providing spaced injection holes (1) within a system in a manner suitable to pass through cavities (i.e., soil voids);

inserting injection tubes (2) in said holes; and

injecting a substance (3) that expands after injection into said holes;

wherein the tubes are gradually retracted during injection (p. 4, lines 1 through 5);

wherein said injection holes are formed substantially at right angles to the largest surface of the cavities (i.e., soil voids);

wherein said substance is constituted by a closed-cell polyurethane foam (p.5, line 11);

wherein said substance is constituted by an MDI and a mixture of polyols;

wherein said substance has a maximum expansion pressure substantially comprised by 20kPa and 200kPa (p. 9, lines 14 through 17); and

monitoring with laser levels (p. 9 at line 20).

With regard to claims 40 through 42, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method disclosed by Vandehey et al. '516 such that it would include the use of a substance constituted by MDI and a mixture of polyols as taught by WIPO '982. Specifically, one having ordinary skill in the art would have had a reasonable expectation of success using a known substance (i.e., MDI and polyols) for a known use (i.e., reinforcement). With specific regard to claim 42, the substance of the method taught by

Art Unit: 3671

the combination of Vandehey et al. '516 and WIPO '982 inherently experiences a reduction in the maximum expansion pressure as it propagates through the cell and the substance hardens.

With regard to claims 66 and 67, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method disclosed by Vandehey et al. '516 such that it include the step of using a laser level as taught by WIPO '982 to constantly monitor the movement of the wall system along directions substantially perpendicular to the planes of arrangement of the two faces of the wall system. The motivation would have been to avoid bursting of the wall system during the step of injecting caused by excessive lateral pressure of the expandable substance.

6. Claims 47 through 50, 52, 53, 55 through 65 and 68 through 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vandehey et al. (U.S. Patent No. 6,662,516 B2).

Vandehey et al. '51 further teach the substance being injected through said injection tubes by gradually retracting said injection tubes upward.

Vandehey et al. '516 fail to teach:

with regard to claim 47,

the substance, once injected and hardened, having compression strength between 180 N/cm² at a density of 200 kg/m³ and 800 N/cm² at a density of 500 kg/m³;

with regard to claim 48,

the substance, once injected and hardened, having compression strength between 200 N/cm² at a density of 200 kg/m³ and 1300 N/cm² at a density of 500 kg/m³;

with regard to claim 49,

Art Unit: 3671

the substance, prior to the beginning of the chemical reaction of expansion, having a viscosity between 200 mPa·s and 300mPa·s at 20°C;

with regard to claim 50,

the viscosity of the substance passing from 200 to 300 mPa·s to a value that tends to infinity in a time interval between 20 and 150 seconds;

with regard to claim 52,

the injection holes being produced along substantially vertical directions;

with regard to claim 53,

the injection holes being produced along directions that are inclined with respect to the vertical;

with regard to claim 55,

the distance between two contiguous injection holes being between 0.20 m and 2.00 m;

with regard to claim 56,

the diameter of the injection holes being between 4 mm and 40 mm;

with regard to claim 68,

preliminary interventions;

with regard to claim 69,

preliminary interventions consisting of providing column-type injections of a substance in regions of the ground spaced from the wall system; and

with regard to claim 70,

preliminary interventions consisting of applying a sheet of geotextile fabric to the surface of the wall system and spray covering said fabric.

With regard to claims 47 through 50, it would have been obvious to one having ordinary skill in the art at the time of invention to make the substance used in the method taught by the combination of Vandehey et al. '516 and WIPO '982 to the claimed specifications. Specifically, one having ordinary skill in the art would have been able to determine optimal specifications for the substance as required for its building reinforcement application.

With regard to claim 52, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method taught by Vandehey et al. '516 such that the spaced injection holes would be formed substantially vertically through the upper wall (112) since the same would have been an obvious design choice. The motivation would have been to access the wall system cavities in the event the walls were positioned below grade.

With regard to claim 53, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method disclosed by Vandehey et al. '516 such that the injection holes would be produced at an incline with respect to the vertical since the same would have been an obvious design choice. The motivation would have been to inject the substance into an upper area of the cavity.

With regard to claims 55 and 56, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method taught by Vandehey et al. '516 such that the injection holes would be spaced between 0.20 m and 2.00 m, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Art Unit: 3671

With regard to claims 57 through 59 and 61 through 65, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method disclosed by the combination of Vandehey et al. '516 such that the system would include an injection tube with an inlet and multiple outlets, the multiple outlets being greater than the inlet; a lubricating material; means for interrupting the injection of the substance; a pressure gauge positioned upstream of the inlet of the injecting tubes; a flow rate measuring device; and piezometer pipes. The Examiner takes Official Notice of these elements in structural applications for effectively reinforcing a building structure by way of injection of substance. The various claimed elements providing for the efficient introduction of the substance in a free-flowing manner, and at a desired pressure and flow rate.

With regard to claim 60, the claimed method step of adjusting the rate of retraction according to a flow-rate of injection of the substance would have been an obvious modification to the method disclosed by Vandehey et al. '516 for one having ordinary skill in the art. The motivation would have been to ensure the introduction of a desired amount of the substance into the cavities.

With regard to claims 68 through 70, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method disclosed by Vandehey et al. '516 such that it would further include the step of providing preliminary interventions in the form of column-type injections or spray-covered geotextile fabric since the Examiner takes Official Notice of the same as expedients for precluding the escape of an injected substance from a hole in structural reinforcement applications.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TARA L. MAYO whose telephone number is (571)272-6992. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas B. Will can be reached on 571-272-6998. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3671

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TARA L MAYO/
Primary Examiner, Art Unit 3671

tlm
10 February 2008